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SHELF TIER SYSTEM FOR SHELVES AND SLIDING RACKS

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Declarations according to Regulation 4.17 [have been filed]:

- Regarding the right of the Applicant to petition and obtain a patent (Regulation 4.17 No. ii) for the following designated states, ZA, European Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR)

- Regarding the right of the Applicant to claim the priority of an earlier application (Regulation 4.17 No. iii) for all designated states
- Inventors declaration (Regulation 4.17 No. iv) only for the US

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For an explanation of the two-letter codes and other abbreviations, please refer to the explanations ("Guidance Notes on Codes and Abbreviations") at the beginning of each regular edition of the PCT Gazette.

(57) Abstract: The invention relates to a shelf tier system for shelves and sliding racks, characterised in that by using a tier frame comprising grooved strips (1), sliding sheet metal (2) comprising recesses for goods, and separating brackets (3) as compartment dividers having insertable plates, a variable arrangement and form of the shelf tiers is ensured.

Shelf systems and sliding tier shelf systems with the usual design are basically not suitable for being set up in a freestanding manner. Shelf systems with the usual design are also limited in their depth for static reasons since the tiers themselves can only be suspended in the shelf systems on one longitudinal side (DE 196 09 432). In the usual shelf system the sliding tiers cannot be variably mounted in their angle of inclination. The materials used do not ensure slidability over their entire service life and must be maintained capable of sliding by the application of lubricants (e.g., silicone). In the usual shelf system the goods separators or compartment dividers do not have sufficient lateral guidance and yield under increased weight of the goods. The compartment dividers consist in part of individual elements that are inserted adjacent to each other and are not firmly connected to each other, so that the goods tier becomes unstable within itself (DE 196 09 432).

The invention indicated by Claim 1 has the problem of creating a variable system of tiers of shelves, and in particular of sliding racks, in accordance with the first-in first-out method with which use for all conceivable goods becomes possible with a permanent assurance of slidability. The stability of the tiers should be reliably ensured over their entire width so that a slipping of the goods separators and of the stored goods out of position is excluded. The goods separators should ensure the sliding down of the goods without them toppling laterally even if the adjacent compartment track is empty. The slidability should be ensured by the use of special materials without the addition of lubricants over the entire service life.

These problems are solved with the features cited in Claims 1 to 5.

The invention ensures a use for all piecegoods in accordance with the first-in first-out method by the construction and the materials used. That is, the goods located in the sliding racks

are positioned in the goods dispenser provided such that the first, that is, the "oldest" goods introduced are also removed first, and the other goods slide down. The separating bracket can be variably fastened so that goods in all conceivable widths can be stored. The separating brackets cannot slide in any direction after being fastened, and ensure a reliable sliding down of the goods within the separated compartment tracks, during which the cross strut prevents a lateral toppling of the goods.

The embodiment described in Claim 2 makes possible a reliable holding of the elements to be added in. The goods slide sheet (Claim 3) rests securely on the tier frame, and the separating brackets (Claims 4, 5) are securely locked with the insertion plates in the slot strip. This design prevents a sliding of the separating brackets in the longitudinal and the transverse direction. In the special design goods stoppers are added in front of the slot strips, which stoppers prevent the goods from falling out. It is possible to apply a price strip on the front and the back side.

The goods slide sheet described in Claim 3 has the advantage that it forms a continuous surface over the tier for a reliable holding of goods and is seated securely on the tier frame by profiles 4. Furthermore, the profiles ensure the necessary stability of the sheets. Cutouts 5 above the slot strips make it possible to completely insert insertion plates 6 of the separating brackets into the slot strips (Figure 2). Another advantage is the fact that the materials used have a low surface friction, and thus goods and products can be stored in the sliding racks that would not slide down in traditional systems during removal, such as, e.g., PET bottles. The materials ensure this property over their entire service life and do not have to be repeatedly maintained with lubricants.

The separating bracket described in Claim 4 has the advantage that it is inserted securely into the slot strips through the insertion plates and is locked to all sides as well as up and down. This effect is reinforced even more by the formation of insertion plates 6 that requires the insertion into the slot strip with a certain minimal tension. At the same time the bracket additionally locks the goods slide sheets in the tier frame by being completely inserted. Cross strut 7 guides the goods sliding down in the compartment tracks and prevents a lateral toppling of the goods.

The locking system described in Claim 5 has the advantage that horizontal cross strut 7 connects the bracket ends with the attached insertion plates. The insertion plates are drawn together by pressing together the bracket and the cross strut and can therefore be more simply inserted through the goods slide sheet into the slot strip. Furthermore, the system in the relieved state ensures a reliable locking of the separating bracket after insertion since the insertion plates rest in the slots with an exact fit and with the appropriate tension.

An embodiment of the invention is explained with reference to Figures 1-5. Figure 1 shows the 3 elements of the tier system, namely, tier frame 1, goods slide sheet 2 and separating bracket 3. Figure 2 shows the insertion plates of the separating brackets in the inserted state in the slots of the slot strips of the frame. Figure 3 shows the goods slide sheet with profile 4 and cutout 5. Figure 4 shows the separating brackets and insertion plates 6 attached to them. Figure 5 shows cross strut 7 of the separating bracket and the method of operation of the locking system.

Claims

1. A shelf tier system for shelves and sliding racks, characterized in that a variable arrangement and design of the shelf tiers is ensured (Figure 1) by the use of a tier frame with slot strips 1, a goods slide sheet 2 with cutouts and separating brackets 3 as compartment dividers with attached insertion plates.
2. Tier frame with close-ended slot strip (Figure 2) for the shelf tier system according to Claim 1, characterized in that the latter reliably receives the separating brackets provided with the insertion plates in a variable manner in the slot strip with lateral spacing, and makes it possible, e.g., to incorporate goods stoppers and price strips by their special design.
3. The goods slide sheet (Figure 3) for the shelf tier system according to Claim 1, characterized in that it comprises continuous profiles (4) on both outer edges that ensure a reliable seating on the tier frame and comprises cutouts (5) in the form of slots above the slots of the slot strips through which the insertion plates of the separating brackets are inserted, and that the latter are manufactured from materials that retain their slidability throughout their service life, in particular by the use of plastic or galvanized steel sheet coated with structural lacquer.
4. The separating brackets with attached insertion plates as compartment dividers for the shelf tier system in accordance with Claim 1 (Figure 4), characterized in that they have a length corresponding to the spacing of the opposite slot strips and thus ensure in this manner that the insertion plates (6) attached to the brackets are inserted through the goods slide sheets with tension into the slot strip and thus reliably lock the brackets in all directions and at the same time secure the goods slide sheets in the frames.
5. The locking system with horizontal cross strut as securing and fastening aid of the separating brackets for the shelf tier system according to Claim 1 (Figure 5), characterized in that the bracket ends with the attached insertion plates are connected by the attaching of a horizontal cross strut (7), which ensures that the insertion plates are drawn together by a pressing together of bracket and cross strut and can thus be introduced more readily through the goods slide sheet into the slot strip, and that in the relieved state after the insertion the system ensures a reliable locking of the separating bracket.

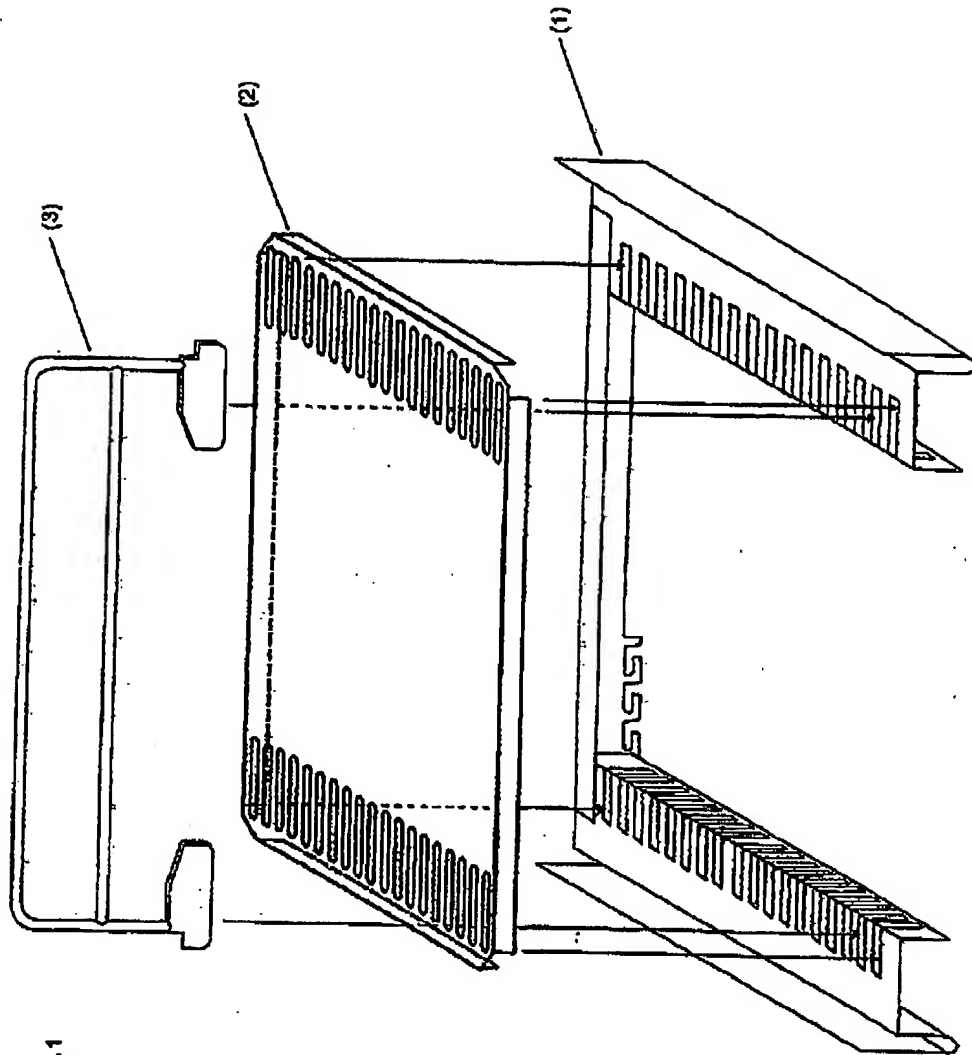


Fig. 1

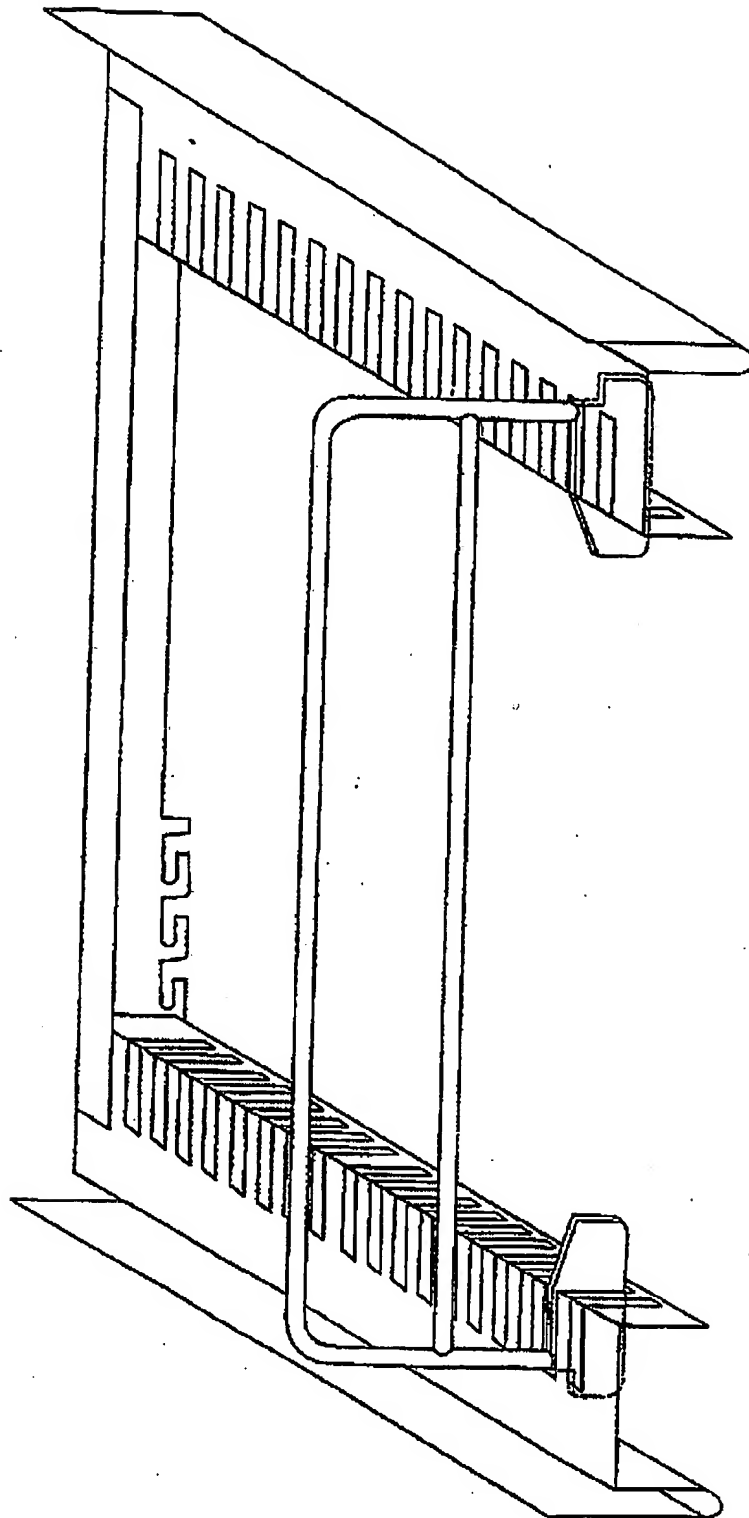


Fig. 2

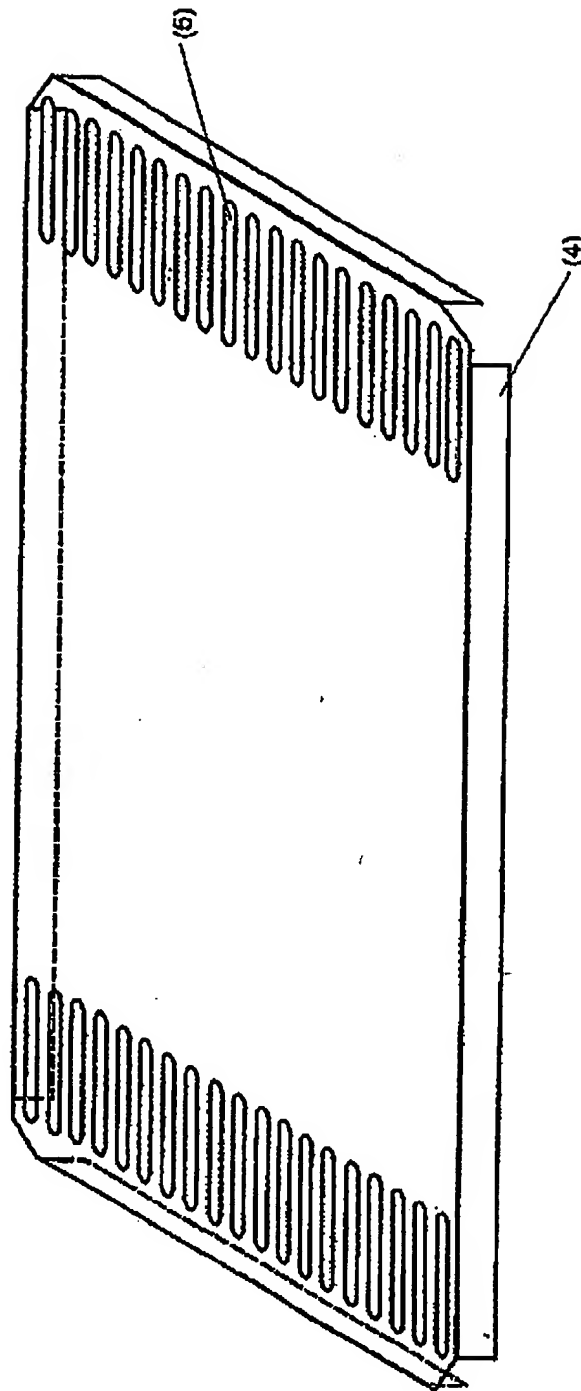


Fig. 3

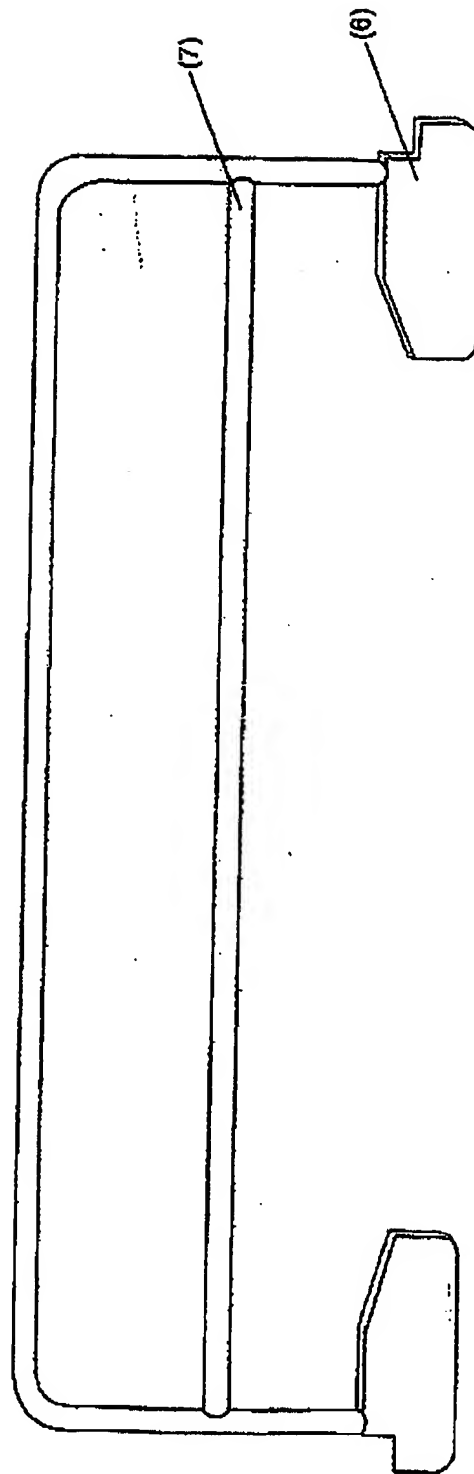


Fig. 4

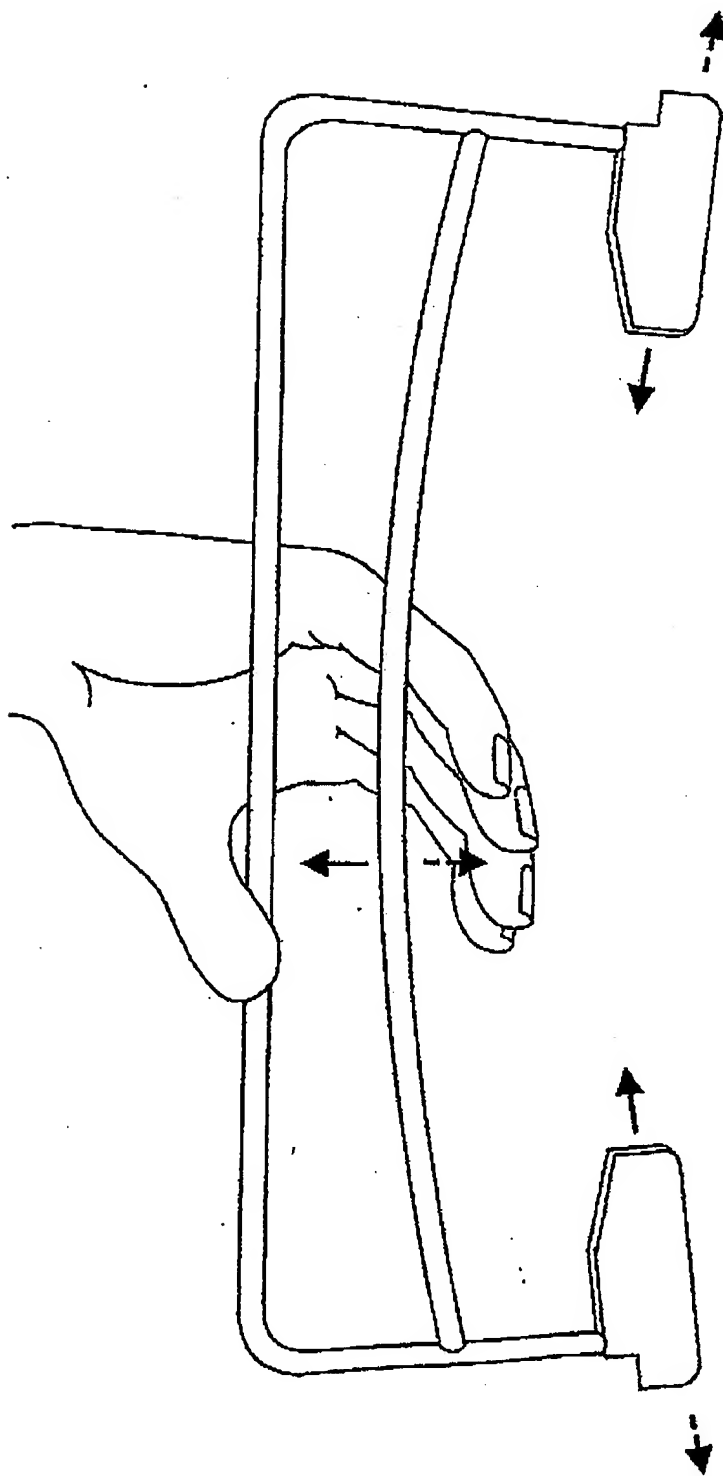


Fig. 5

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A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A47F5/00 A47F1/12		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 A47F A47B		
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Electronic data bases consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 116 436 A (FERRUCCI ROBERT D ET AL) 12 September 2000 (2000-09-12) abstract; figures 1,4	1
A	DE 196 09 432 A (DECOR METALL KARL BECKER GMBH) 18 September 1997 (1997-09-18) cited in the application abstract; figure 1	1
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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6116436	A	12-09-2000	NONE	
DE 19609432	A	18-09-1997	DE 19609432 A1	18-09-1997

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